



September 30, 2020

NG-20-0085
10 CFR 50.73

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

Duane Arnold Energy Center
Docket 50-331
Renewed Op. License No. DPR-49

Licensee Event Report 2020-001-01

On September 11, 2020, Duane Arnold Energy Center (DAEC) submitted Licensee Event Report (LER) 2020-001-00 (ML20558A229). Subsequent to filing this report, new information was discovered that met additional reporting criteria for this event. DAEC is, therefore, submitting revised LER 2020-001-01 with additional reporting criteria and description.

Please find attached the subject report submitted in accordance with 10 CFR 50.73. This letter makes no new commitments or changes to any existing commitments.

A handwritten signature in black ink, appearing to read "Dean Curtland". The signature is fluid and cursive.

Dean Curtland
Site Director, Duane Arnold Energy Center
NextEra Energy Duane Arnold, LLC

IE22
NRR

cc: Administrator, Region III, USNRC
Project Manager, DAEC, USNRC
Resident Inspector, DAEC, USNRC



LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. Facility Name

Duane Arnold Energy Center

2. Docket Number

05000-331

3. Page

1 OF 4

4. Title

Notice of Unusual Event and Unit Trip Due to Loss of Offsite Power Due to High Winds

5. Event Date

Month	Day	Year
8	10	2020

6. LER Number

Year	Sequential Number	Rev No.
2020	0001	01

7. Report Date

Month	Day	Year
9	30	2020

8. Other Facilities Involved

Facility Name	Docket Number
N/A	N/A
Facility Name	Docket Number
N/A	N/A

9. Operating Mode

1

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)

<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input checked="" type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(ii)
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(iii)
<input type="checkbox"/> 50.73(a)(2)(i)(C)		<input type="checkbox"/> Other (Specify in Abstract below or in NRC Form 366A)	

10. Power Level

80%

12. Licensee Contact for this LER

Licensee Contact

Bob Murrell, Licensing Engineer

Telephone Number (Include Area Code)

319-851-7900

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable To ICES	Cause	System	Component	Manufacturer	Reportable To ICES
C	EB	JX	N/A	Y	N/A	N/A	N/A	N/A	N/A

14. Supplemental Report Expected

☐ Yes (If yes, complete 15. Expected Submission Date) ☒ No

15. Expected Submission Date

Month	Day	Year
N/A	N/A	N/A

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On August 10, 2020, at 1246 CDT, while operating at 80% power, NextEra Energy Duane Arnold (DAEC) experienced a generator load reject and subsequent reactor scram as a result of a loss of offsite power (LOOP) due to extremely high winds. An Unusual Event was declared at 1258. All Safety Systems performed as designed. As a result of the LOOP, the 'A' and 'B' Emergency Diesel Generators automatically started and supplied power to the safety related busses. As a result, the High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) automatically initiated and injected into the reactor. In addition, containment isolations occurred, as expected for this event. This resulted in a 4-hour event report to the NRC under 10 CFR 50.72 section 50.72(b)(2)(iv)(A) - ECCS Injection, 50.72(b)(2)(iv)(B) - RPS Actuation - Critical, 50.72(b)(3)(iv)(A) - Valid Specific System Actuation (reference EN#54826). The NOUE was exited at 1600 on August 11, 2020. The cause of the LOOP was an extremely severe storm (called a Derecho) with heavy rains and very high winds. This event had no impact on public health or safety. There were no systems, structures, or components inoperable at the time of the event that contributed to the event. This event is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A), 50.73(a)(2)(v)(C) and 50.73(a)(2)(iii). There were no radiological releases associated with this event.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Duane Arnold Energy Center	05000-331	2020	- 001	- 01

NARRATIVE**I. Description of Event:**

On August 10, 2020, at 1246 CDT, while operating at 80% power, NextEra Energy Duane Arnold (DAEC) experienced a Generator Load reject and subsequent reactor scram as a result of a loss of offsite power (LOOP) due to extremely high winds. An Unusual Event was declared at 1258. All Safety Systems performed as designed.

As a result of the LOOP, the 'A' and 'B' Emergency Diesel Generators (EDGs) automatically started and supplied power to the safety related busses. In response to the expected Reactor Pressure Vessel (RPV) level transient, the High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) automatically started and injected. In addition, containment isolations occurred, as expected for this event.

This resulted in a 4-hour event report to the NRC under 10 CFR 50.72 section 50.72(b)(2)(iv)(A) - ECCS Injection, 50.72(b)(2)(iv)(B) - RPS Actuation – Critical, 50.72(b)(3)(iv)(A) - Valid Specific System Actuation (reference EN#54826).

The cause of the LOOP was an extremely severe storm (called a Derecho) with heavy rains and very high winds. This event had no impact on public health or safety. There were no systems, structures, or components inoperable at the time of the event that contributed to the event.

The Unusual Event was exited at 1600 on August 11, 2020.

II. Assessment of Safety Consequences:

In response to the LOOP, the plant experienced a Generator Lockout, Turbine Trip and Reactor Scram. The operating crew entered the appropriate emergency procedures. The EDG's quickly re-energized the safety-related electrical busses and restored power. The Reactor Protection System (RPS) power was never lost as the EDG's were able to recover power to the essential buses quickly. This prevented a Main Steam Isolation Valve (MSIV) isolation signal and thus allowed the Main Condenser to remain available post event.

As expected for this event, RPV level dropped below L2 setpoint (119.5") initiating the HPCI and RCIC systems. Reactor level recovered quickly. The Low Low Set System functioned as designed initially opening two primary system relief valves to control reactor pressure.

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Operators were quickly able to establish pressure control initially via Steam Line Drains and RCIC and establish a cooldown rate.

Both recirculating pumps tripped when power was lost to their associated non-safety related electrical busses. The operators followed procedures for cooldown with no forced circulation in the core. When Shutdown Cooling was placed in service, forced circulation was re-established which resulted in exceeding the bottom head cooldown limits of 100 degrees per hour. This was anticipated and could not be avoided.

On August 12, a small cut was discovered in the Reactor Building 5th floor wall that was the result of storm damage. A test of the Secondary Containment boundary was conducted to determine the effect of the cut. The vacuum able to be drawn on secondary containment with one train of Standby Gas Treatment System (SGTS) was 0.24 inches of water. The vacuum required to be drawn by Technical Specification Surveillance Requirement is 0.25 inches of water. Secondary Containment was declared inoperable with the plant not in the mode of applicability (Mode 4, Cold Shutdown). During a review of past operability of Secondary Containment, it was determined that the cut in the Reactor Building wall likely existed during the period the plant was cooling down in Mode 3, Hot Shutdown. Secondary Containment is required to be operable in Mode 3.

DAEC design basis documents state the design safety criteria for SGTS is to "limit exfiltration from the secondary containment during periods of primary and/or secondary containment isolation" and "to control outward leakage of the atmosphere from the secondary containment". Therefore, the safety function of SGTS and Secondary Containment was maintained by the ability to draw a substantial vacuum of 0.24 inches of water with the cut in the Reactor Building wall. Although the safety function of Secondary Containment and SGTS was maintained throughout this event, the reporting criteria in NUREG-1022 for 50.73(a)(2)(v)(C) states "... a report is required when 1) there is a determination that the SSC is inoperable in a required mode or other specified condition, 2) the inoperability is due to ... equipment failures ..., and 3) no redundant equipment in the same system was operable." Since Secondary Containment was declared inoperable, it meets the reporting criteria outlined in NUREG-1022.

This event did not result in a Safety System Functional Failure.

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III. Cause of Event:

The cause of the LOOP was an extremely severe storm (called a Derecho) with heavy rains and very high winds. Wind speeds exceeded 80 mph for over 20 minutes with peaks on site at greater than 100 mph. The National Weather Service later estimated wind speeds were likely near 130 mph. These winds resulted in all 6 off site power sources (4 - 161 kV and 2 - 345 kV) coming into the DAEC switchyard being damaged or downed. A separate offsite 69 kV line which feeds non-essential plant loads was also damaged.

IV. Corrective Actions:

The high winds experienced on August 10, 2020 were not considered a beyond design basis event. The systems and components responded as designed and the overall peak wind speeds were within the Design Basis Tornado. The damage observed coincides with the amount of damage expected for the event. Given this event was outside the control of the station staff and that all components worked as designed, no additional corrective actions beyond repair/recovery efforts related to the wind storm are needed.

V. Additional Information:Previous Similar Occurrences:

A review of NextEra Energy Duane Arnold LERs from the previous 5 years identified the following event:

LER 2018-004 – Automatic Reactor Scram due to Feedwater Regulating Valve Failure
LER 2019-001 – Automatic Reactor Scram due to Loss of Feedwater

EIIS System and Component Codes:

EB – Medium-Voltage Power System

Reporting Requirements:

This activity is being reported pursuant to the requirements of 10 CFR 50.73(a)(2)(iv)(A), 50.73(a)(2)(iii), and 50.73(a)(2)(v)(C).